

To: Francendese, Leo[Francendese.Leo@epa.gov]; R4 ERRB[R4_ERRB@epa.gov]
From: Franco, Benjamin
Sent: Fri 1/10/2014 4:54:15 PM
Subject: RE: West Virginia chemical spill cuts water to up to 300,000, state of emergency declared - U.S. News- Why this chemical is used in Froth Flotation

Pulled from the interweb:

In the coal industry, various types of shale and clay are produced as a mixture with the coal. To increase the heating value of the coal and to reduce the hauling costs, a complex process of coal washing is normally used to reduce the total ash content. In this process the coal is graded to a certain size, usually less than six inches, and then fed into a slurry bath in which the density of the media is closely controlled. The coal floats in the heavy media bath while the heavier rocks sink to the bottom. Following this heavy media separation, all the floated material is again sized by vibrating screens for further purification. The smaller size fraction may be processed by shaking tables, hydrocyclones, or froth flotation. In each of these steps, coal is recovered and dried prior to shipment.

Flotation is a process for separating finely ground minerals such as coal particles from their associate waste or gangue by means of the affinity of surfaces of these particles for air bubbles, which is a method for concentrating coal particles. In the flotation process a hydrophobic coating is placed on the particles which acts as a bridge so that the particles may attach to the air bubble and be floated, since the air bubble will not normally adhere to a clean mineral surface such as coal.

In the froth flotation of coal, a froth is formed by introducing air into so-called pulp which contains impure finely divided coal particles and water containing a frothing agent. The flotation separation of coal from the residue or gangue depends upon the relative wettability of surfaces and the contact angle, which is the angle created by the solid air bubble interface.

A frothing agent is utilized to provide a stable flotation froth persistent enough to facilitate the coal separation but not so persistent that it cannot be broken to allow subsequent handling.

Froth flotation is performed in machines specifically designed for the purpose, i.e., the Denver Sub-A machine, and the Wemco machine.

The use of froth flotation to effect a separation of ash particles from coal can be achieved only if liberation of these unwanted particles from the coal has taken place. Most high-grade coals are floatable naturally due to their hydrophobic surface and typically only require a frothing agent for effecting flotation. A frothing agent imparts elasticity to the air bubble, enhances particle-attachment so that the coal is buoyed to the surface of the slurry.

From: Francendese, Leo
Sent: Friday, January 10, 2014 9:04 AM
To: R4 ERRB
Subject: Fw: West Virginia chemical spill cuts water to up to 300,000, state of emergency declared - U.S. News

fyi

From: leofrancendese **Ex. 6 - Personal Privacy**

Sent: Friday, January 10, 2014 7:57:28 AM

To: Francendese, Leo

Subject: West Virginia chemical spill cuts water to up to 300,000, state of emergency declared - U.S. News

http://usnews.nbcnews.com/_news/2014/01/09/22245996-west-virginia-chemical-spill-cuts-water-to-up-to-300000-state-of-emergency-declared?lite